



**SAN BERNARDINO COUNTY FIRE DEPARTMENT
COMMUNITY SAFETY DIVISION**

620 South 'E' Street
San Bernardino, CA 92415-0179
(909) 386-8400

Standard Number

W-1

Revision Date:
3-22-16

FIRE SAFETY STANDARD

WATER SUPPLY FOR RESIDENTIAL FIRE PROTECTION

AUTHORITY

Sections 102.9 of the 2013 California Fire Code and Sections 4 and 8 of the San Bernardino County Fire Protection District Fire Code Ordinance state that the fire code official of the San Bernardino County Fire Department shall have the authority to adopt policies, procedures, rules, and regulations in order to clarify the application of the Fire Code and to determine requirements not specifically provided for by the Fire Code. For further requirements on this subject, see sections 503.1 and 503.2 et. seq. of the 2013 California Fire Code. This standard may be modified with the approval of the Fire Code Official.

PURPOSE

The purpose of this standard is to serve as an alternate guideline to NFPA 1142 for establishing a fire protection water supply for single family residential occupancies in areas not served by a water purveyor.

SCOPE

This standard applies to new single family dwellings, two family dwellings, and non-dwelling accessory structures within areas that have no water purveyor capable of providing an adequate water supply for firefighting purposes, as determined by the requirements in the San Bernardino County Fire Code.

DISCLAIMER

These standards may change without notice. Whenever applicable statutes, regulations and standards are updated and adopted, the latest shall apply. Please contact the Community Safety Division at (909) 386-8400 to determine if these standards have changed.

These requirements do not exempt any individual from complying with other applicable state, county, or city codes and standards.



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SUBMITTALS

Plans for water tanks and appurtenances shall be submitted to the Fire Code Official for review, approval and permit prior to installation.

The submittal shall contain, at a minimum, the following:

- 1) Locations and elevations of all structures, including dwellings and any accessory structures
- 2) Locations and elevations of all fire department access roads, including any obstructions to fire access (See SBCFD Standards A-2 and A-3 for more information)
- 3) Location, size and elevation of water tank(s)
- 4) Location, size, and type of Fire Department Hose Connection (FDHC)
- 5) Location, size and type of any underground fire protection water piping
- 6) Details of any methods for freeze protection used
- 7) Any other significant information required in this Standard

DEFINITIONS

FIRE DEPARTMENT HOSE CONNECTION (FDHC): A connection provided in conjunction with a water storage tank that allows fire fighters to connect and obtain needed water for fire-fighting purposes.

FIRE PROTECTION WATER SUPPLY: A water supply provided for firefighting purposes only. Water required for domestic, industrial, landscaping, agricultural or any other use are in addition to a fire protection water supply.

SELF-CONTAINED AUTOMATIC FIRE SPRINKLER SYSTEM: A fire sprinkler system that is supplied from a water source that is not dependent on a municipal (public) system and that consists of a water storage tank and a reliable method of pressurizing water, such as gravity, booster pump with emergency power, or pressurized cylinder.

WHARF HYDRANT: A fire hydrant with minimum four inch (4") underground supply piping and with a single two and one-half inch (2-1/2") outlet.



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GENERAL

Effective Jan 1, 2011 all new residential construction is required to be protected by an automatic fire sprinkler system. In areas without a water purveyor, an approved self-contained automatic fire sprinkler system may be installed. This standard will provide the guidance when an onsite water storage tank for fire protection water supply is required.

FIRE DEPARTMENT HOSE CONNECTIONS

- 1) FDHC's shall be installed within ten feet (10') of the driveway or access road, no closer than twenty five feet (25') and no farther than one hundred fifty feet (150') from structures to be protected. **See Diagram W-1.1.**
- 2) Fire Department Hose Connections shall be installed so that there is an elevation difference of thirty six inches (36") minimum between the FDHC and the bottom of the water tank, for effective gravity flow, unless an approved fire pump is provided. **See Diagram W-1.2.**
- 3) If special conditions preclude the installation of a remote FDHC, an approved two and one-half inch (2-½") National Standard Hose Thread FHDC may be installed on the bottom of a water storage tank when approved by the fire code official. This FHDC must be between twelve (12") and twenty four inches (24") from the adjacent ground level, and on the same side of the tank as a fire access roadway. **See Diagram W-1.2.**
- 4) FDHC's shall be National Standard Hose Thread, two and one-half inch (2 ½") in size, and listed for fire service use. A wharf hydrant or equivalent assembly shall be acceptable within the scope of this standard. The FDHC outlet shall be installed between twelve (12") and twenty four inches (24") above adjacent grade level.
- 5) When subject to the possibility of vehicle impact, FHDCs shall be protected by approved bollards. Bollards shall be installed in accordance with the current edition of NFPA Standard 24. **See Diagram W-1.3.**
- 6) Fire Department Hose Connections shall be painted red. An approved blue reflective marker shall be installed on the roadway nearest the FHDC. In areas prone to snowfall, an approved snow marker shall be installed (an approved visual pole with a reflective top above snow level shall be installed for location of FDHC).
- 7) FDHC's shall be installed so that a clear space having a radius of three feet (3') from connections is maintained free of obstructions, such as landscaping or parking, at all times.



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SUPPLY PIPING

- 1) All piping supplying FDHC's shall be a minimum of four inches (4") in size, and shall be of approved schedule 40 CPVC plastic. Pipe shall be buried at a minimum of twenty four inches (24") below grade level, or below frost level as specified in the current edition of NFPA standard 24, whichever is greater. Where piping passes under areas subject to vehicular traffic, the minimum depth of bury shall be thirty six inches (36") below grade, or below frost level, whichever is greater.
- 2) The system shall be designed and installed so that the integrity of the piping and the connection of all appurtenances allow for a proper draft to be initiated and maintained at all times.

WATER TANKS

- 1) Fire protection water supply tanks shall be constructed of approved plastic, metal, cement, or other material and listed for fire department use.
- 2) Water tanks shall be installed securely and on flat grade and shall be located a minimum of twenty five feet (25') from a structure, and shall be visible from the street on the address side of the structure.
- 3) Tanks shall be sized to provide the water supply needed to flow the sprinkler system for a minimum of ten (10) minutes (based on the calculated flow rate of the sprinkler system), or as sized per NFPA 1142.
- 4) Domestic water supplies (including that for irrigation of landscaping) shall not be stored in fire protection water supply tanks unless it can be shown that adequate water can be provided to satisfy all current and future domestic needs in addition to that required for fire protection, but in all cases the water capacity of the tank shall be increased to a minimum two thousand five hundred (2,500) gallons above what is needed for fire protection supply only.
- 5) When the fire protection supply and domestic water supply are in the same tank, an approved low level water alarm device shall be installed and set so as to activate when the supply in the tank is at the level required for fire protection supply. Such alarm shall be sounded locally within the primary dwelling on the property or shall have an automatic refill system from the domestic line from the water supply on site. Tanks supplying water for fire protection purposes shall be maintained at full.



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FIRE PUMPS

- 1) Any proposed fire pumps that take suction from water tanks in order to maintain proper head pressure must be listed and approved for fire protection use. Fire pumps shall be tested prior to final acceptance.
- 2) Fire pumps shall serve a combination of both domestic and fire protection needs, or shall have an approved emergency power source if serving fire protection demand only.

TANK VALVES

- 1) Control valves shall be provided for all installations. Valves shall be of the indicating type and locked in an open position. The following control valves shall be provided:
 - a) FDHC control valve. This valve located between the tanks and the FDHC outlet shall be placed at location(s) approved by the Fire Code Official.
 - b) Water Source Control Valves. One valve shall be provided to isolate tanks from water fill sources.
 - c) Fire Pump Bypass Control Valves. This valve shall be installed when pumps are installed that take suction from water tanks, and shall be located on the supply side of pump intake lines and bypass water lines. No other control valve shall be on the system unless approved by Fire Code Official. **See Diagram W-1.4**

SIGNAGE

- 1) Water storage tanks shall be labeled with signage stating "FIRE PROTECTION WATER SUPPLY" per **Diagram W-1.5**. Letters shall be white with red background and shall be reflective.
- 2) FDHC valves shall be labeled with signage indicating the address of the property that is served, stating "FIRE DEPARTMENT HOSE CONNECTION" per **Diagram W-1.5**. Numbers and letters shall be white with red background and shall be reflective.

PROTECTION FROM FREEZING

- 1) Water tanks and all valves and piping shall be protected from freezing when installed at or above an altitude of three thousand five hundred feet (3,500') above sea level. Freeze protection shall be accomplished using one or more of the following methods, subject to the approval of the fire code official:



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- a) Insulation installed around water tanks and piping
- b) Piping installed without water (dry), but capable of completely filling with water when valves are opened
- c) Heat tape installed as per the fire code.

INSPECTION AND MAINTENANCE

- 1) All fire protection water supplies within the scope of this standard shall be subject to inspection by the Fire Department. The final location of Fire Department Hose Connections (FHDC's) shall be subject to Fire Department approval.
- 2) All materials used in tank installations shall be new. Storage tanks shall be full of water at time of Fire Department inspection, and if used with domestic supply, a low-level alarm test shall be conducted at final. If FDHC is not attached to the tank, the installer shall leave trench open for inspection of underground piping.
- 3) Foundations for tanks shall be subject to permits from the Building and Safety Department.
- 4) Water storage tanks, connections and valves shall be maintained in an operable, full and ready condition at all times.



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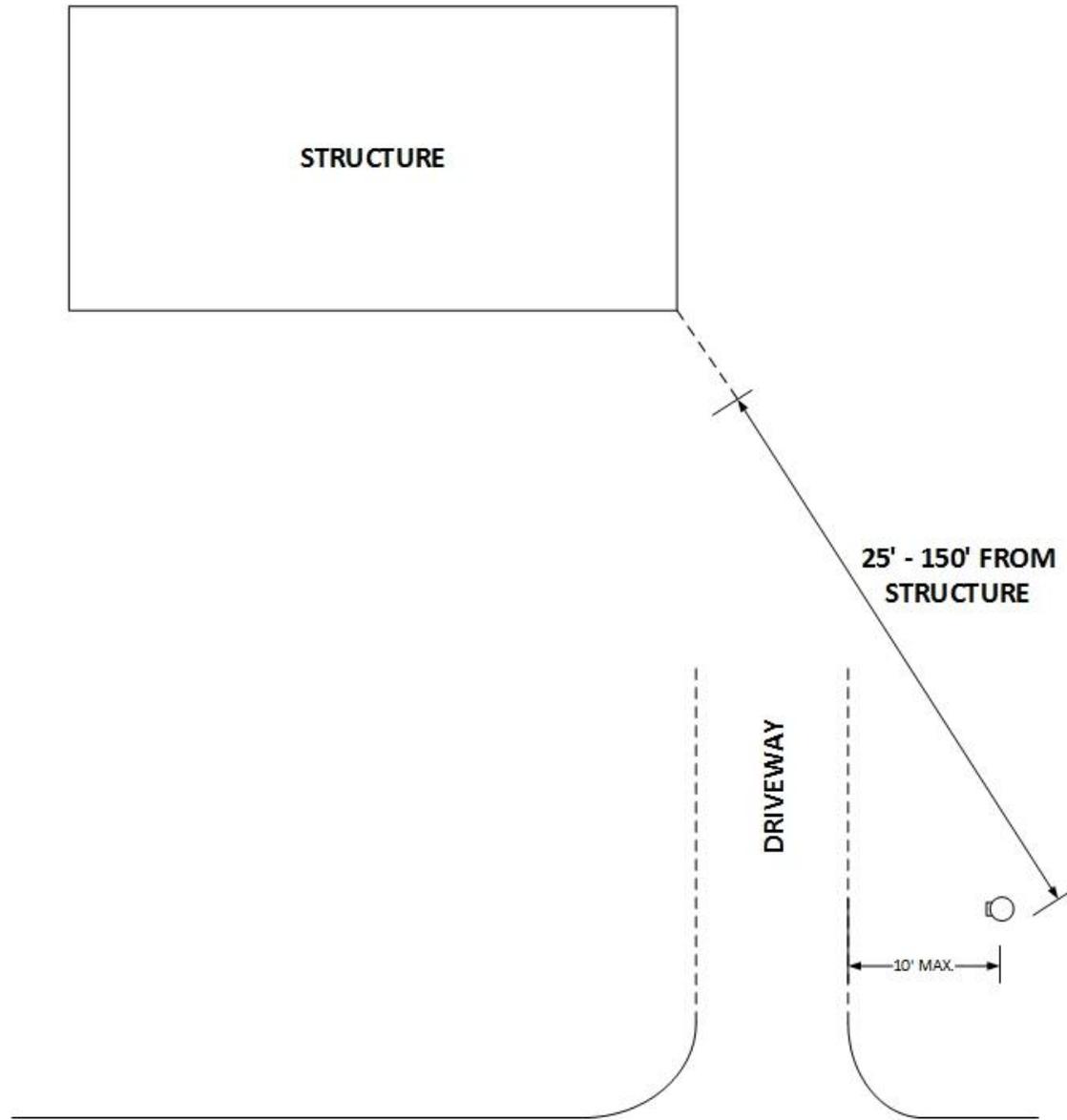
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DIAGRAM W-1.1: FIRE DEPARTMENT HOSE CONNECTION INSTALLATION





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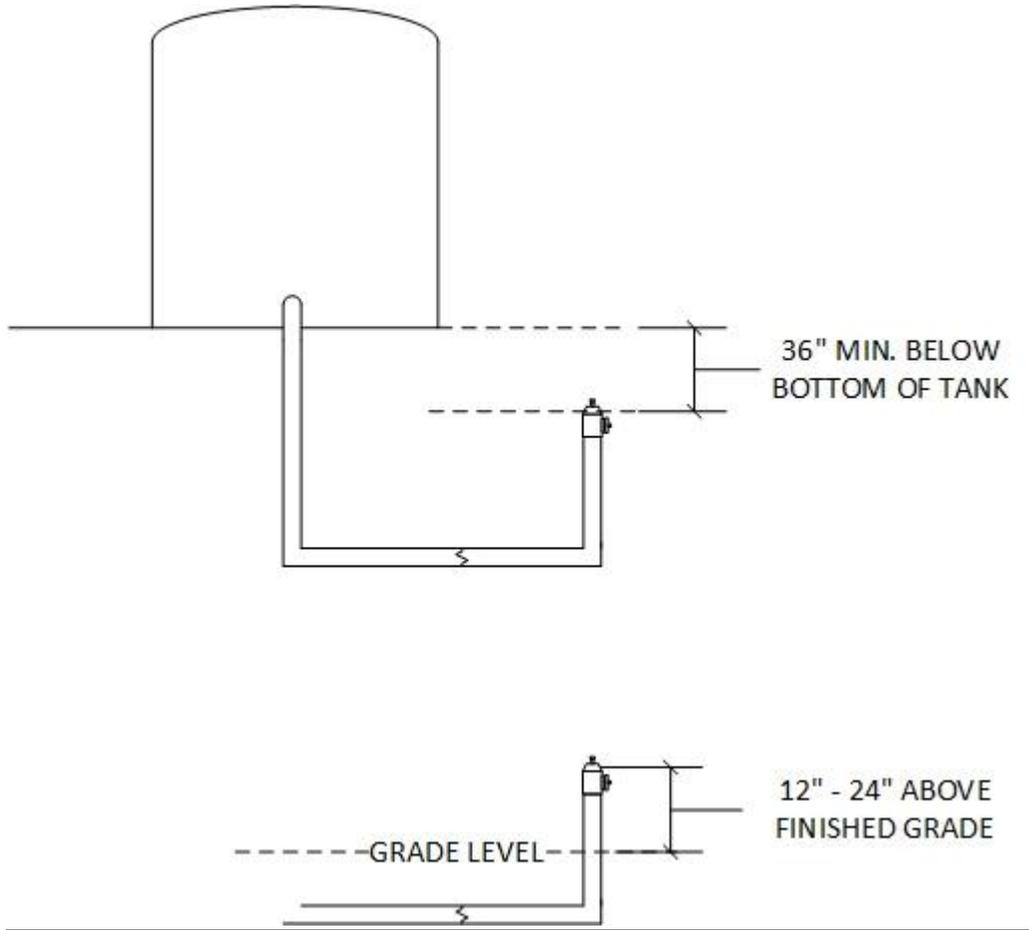
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DIAGRAM W-1.2: GRAVITY FLOW INSTALLATION METHOD





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DIAGRAM W-1.3: PROTECTIVE BOLLARD DETAILS

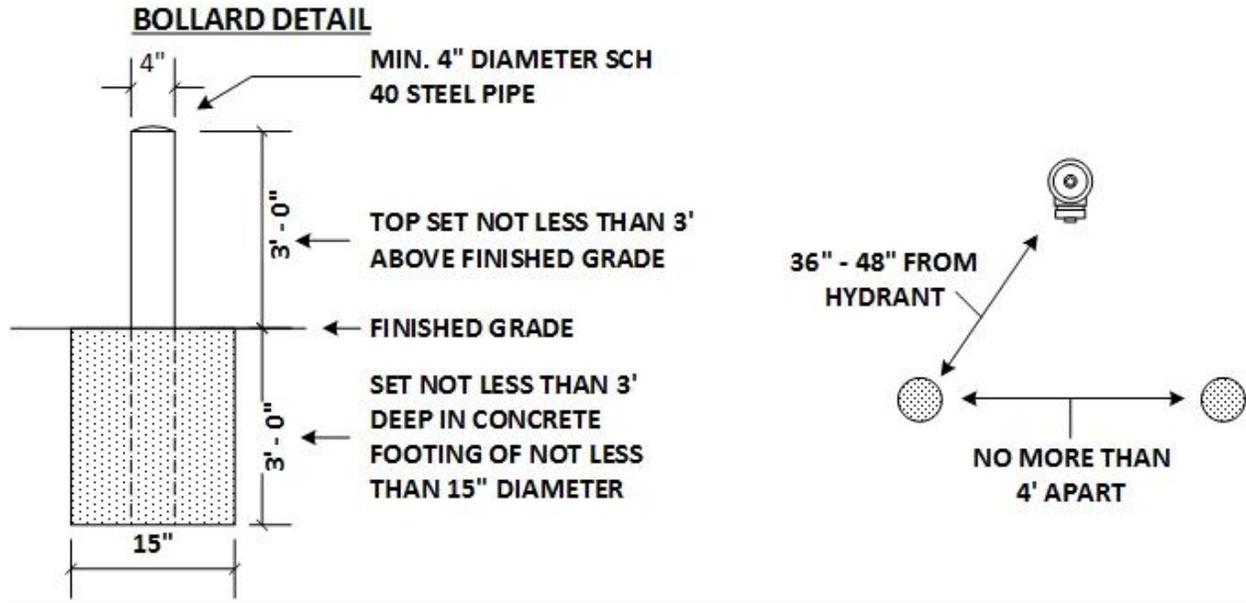
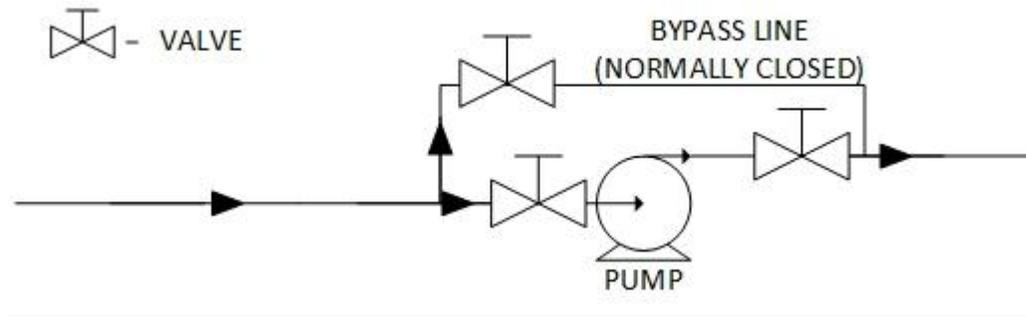


DIAGRAM W-1.4: FIRE PUMP BYPASS CONTROL VALVES





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DIAGRAM W-1.5: SIGNAGE DETAILS

